



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

UPON THE PRESENCE OF SUPPURATION IN THE TUBERCLES OF LEPROSY.*†

FRASER B. GURD.

(From the Pathological Laboratory, Tulane University of Louisiana.)

Altho the majority of leprographers recognize that the cutaneous nodules in the tubercular type of leprosy may and do occasionally "break down" with the formation of a purulent or necrotic material, resulting in many cases in sinuses or ulcers, practically all observers are unanimous in stating that true pus formation or polymorphonuclear leukocytic invasion of the tubercles occurs only in the presence of a secondary bacterial invader such as the streptococcus or staphylococcus.

Sticker¹ remarks that there can be no suppuration without the presence of pyogenic cocci. Babes² considers the "breaking down" to be a true necrosis, and trophonecrotic in origin. In a similar manner by all authors except Sugai,³ the possibility of acute inflammatory processes on the leprous lesion is either neglected or denied.

This last-mentioned author reported in 1909 a series of cases, in which pus was found in the nodules, in one of which no organisms other than the leprosy bacillus were found. His methods of excluding the possibility of secondary invasion were somewhat incomplete in that cultivation was not attempted. He states, however, in his conclusions that the leprosy bacilli may cause suppuration without the presence of any pyogenic coccus.

That many or, perhaps, most of the abscess formations, suppurative arthritises, and other purulent processes occurring in leprous patients are due to the invasion of tissues whose resistance is lowered by one or other of the ordinary pyogenic bacteria is undoubtedly correct; that, however, such a condition is not a necessity the following case which came under the author's observation proves.

* Received for publication August 31, 1910.

† Read by title at the seventh annual meeting of the American Society of Tropical Medicine, held at the Medical School of the St. Louis University, June 11, 1910.

¹ *Tropen-Krankheit* (Mense), Leipzig, 1905.

² *Nothnagel Encyclopaedie*, Wien[("Leprosy")].

³ *Leprosy* (Leipzig), 1909, 8, [No. 3].

The patient, a young white male of 22 years, had suffered from leprosy during a period of between two and three years. During this time he had passed through several attacks of exacerbation of symptoms consisting of high fever, with swelling edema and reddening of the tubercles. Upon the occasion when seen by the author his temperature had been between 103° and 104° F. for three days. He was suffering from malaise anorexia and other evidences of a constitutional disturbance. The tubercles situated over the face and hands were much swollen, very red and tender: one swelling over the malar prominence on the left side had ruptured spontaneously and was discharging pus. A tubercle over the posterior surface of the left wrist was incised, resulting in the expulsion of about 25 c.c. of a yellowish-green purulent material.

This material was planted upon the ordinary and several special culture media, both aerobically and anaerobically, without the development of a single colony.

Smears were made and stained by Giemsa's method, carbol fuchsin with acid decolorization, and by Gram's. The cellular elements with the polychrome stain consisted almost exclusively of polymorphonuclear leukocytes, together with a small number of large vesicular nuclei, practically devoid of protoplasm. Leprosy bacilli were present in very large numbers. A few well-formed aggregations or globi were found, but for the most part the bacilli were lying singly or in small groups. A much larger percentage than usual appeared broken up in the form of granules. Certain numbers of pus cells contained a few bacilli, but in general the organisms were free. Absolutely no other bacteria could be demonstrated in any preparation.

In addition to the above case in which comparatively large pus collections were present, the routine examination of a number of leprosy nodules derived during life and at autopsy has shown that polymorphonuclear leukocytes may be found almost constantly in small numbers, although in no case have definite foci of such cells been seen.

The fact that acute exudative inflammatory changes should occur in leprosy is not strange when we consider the other granulomata, such as tuberculosis and glanders. Acute abscess formation

in tuberculosis is not frequent, but can hardly be said to be rare, and a moderate number of pus cells may be found in many lesions. As demonstrated by Duval,¹ working upon glanders in laboratory animals, all lesions from the acute to proliferative may be produced by varying the virulence of the organisms used.

An interesting observation, with reference to the clinical course of cases which develop the so-called lepra-fever, has been made by Dr. Ralph Hopkins of this city; namely, that immediately following the cessation of the attack the condition of the individual improves until both constitutionally and locally the patient is better than previous to the onset of acute symptoms. This condition of affairs occurred in the case described in this paper.

It is difficult to understand why the invasion of the lesions by acute inflammatory cells should take place in this sudden manner, but there would appear to be no doubt but that the action of these cells results in a destruction of many of the bacilli with consequent clinical improvement. The author considers that a routine examination of tubercles from cases of lepra-fever would in all probability show a comparatively large proportion of polymorphonuclears.

Since it does not seem reasonable that an alteration in virulence should suddenly take place simultaneously in the bacilli in lesions in different parts of the body, the cause of the alteration in the reaction to the irritant must be looked for in the individual suffering from the disease. In studying the local cellular changes in such cases, therefore, the opsonic index ought to be considered, for, since we know that the opsonin influences the phagocytic activity of the polymorphonuclear leukocytes, we should expect to find the index against *B. leprae* raised at the time during which the cells are more active. That this increased reaction is potent to injure the organisms, the degenerative condition morphologically of the organisms and the improvement of the disease clinically are evidence.

¹ Duval, *Jour. of Exp. Med.*, 1907, 9, No. 4.